DOCUMENT RESUME

ED 391 434 HE 028 870

AUTHOR Graham, Steve; Cockriel, Irv
TITLE Indexes To Assess Social and Personal Development and the Impact of College. ASHE Annual Meeting Paper.
PUB DATE Sep 95
NOTE 25p.; Paper presented at the Annual Meeting of the Association for the Study of Higher Education (20th, Orlando, FL, November 2-5, 1995).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS College Outcomes Assessment; College Role; *College Students; Higher Education; Individual Development; Measures (Individuals); Moral Development; National Surveys; *Outcomes of Education; Personality Development; Social Development; *Student College Relationship; *Student Development
IDENTIFIERS American College Testing Program; *ASHE Annual Meeting; *College Outcomes Survey

ABSTRACT

In response to the growing public interest in seeing that higher education institutions address the personal development needs of students, this study evaluated the personal and social growth of college students and introduced an index of personal and social growth of college students. The study used the new American College Testing Program's College Outcomes Survey (COS) with a national sample of 9,400 undergraduate students to evaluate the effects of college on the personal and social self-concept of students. Indexes of personal growth were developed for each of 36 items from Section 2, Part D of the COS, as an indicator of "college effect" which considers the interaction of student growth and the college role in that development. Application of these indexes indicated that colleges had substantial impact on 28 of the 36 items. A factor analysis was conducted that identified four general factors: intra-personal development, personal valuing and moral development, social leadership and development, and civic involvement and awareness. Examining the broad categories of college impact on student development showed that the highest index value was in the area of intra-personal development. Includes three tables. (Contains 30 references.) (JB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 391 434

Indexes to assess social and personal development and the impact of college

Running Head: College Outcome Indexes

Steve Graham, Associate Dean , College of Education and Associate Professor
Irv Cockriel, Professor and Director of Grants Development Office

Department of Educational Leadership and Policy Analysis

University of Missouri-Columbia (MU)
Columbia, MO

September, 1995

HE 028 870

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

ASHE

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☑ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

BEST COPY AVAILABLE

ASHE

ASSOCIATION
FOR THE
STUDY OF
HIGHER EDUCATION

Texas A&M University
Department of Educational
Administration
College Station, TX 77843
(409) 845-0393

This paper was presented at the annual meeting of the Association for the Study of Higher Education held at the Marriott Hotel, Orlando, Florida, November 2-5, 1995. This paper was reviewed by ASHE and was judged to be of high quality and of interest to others concerned with the research of higher education. It has therefore been selected to be included in the ERIC collection of ASHE conference papers.

Abstract

The new ACT College Outcomes Survey was used with a national sample of 9,400 undergraduate students to evaluate the effects of college on the personal and social self-concept of students. Indexes of personal growth attributed to college attendance" were developed for each of 36 items as an indicator of "college effect" considering the interaction of student growth and the college role in that development. These indexes indicated that colleges had substantial impact for 28 of the 36 areas and suggest to college administrators the areas of personal and social where college has its greatest impact. Factor analysis was also used to identify four general factors and the index ratings for the four factors are provided.

Indexes to Assess Social and Personal Development and the Impact of College

Recent demands for institutional accountability, increasing criticism of higher education institutions, and competing demands for public resources to address a host of social problems have forced colleges to become concerned about assessing the effectiveness of their activities (Ashworth, 1994; Ewell, 1994; Graham, Schmidt, Miller, & Stickney-Taylor, 1994; , Marchese, 1994; Votruba, 1992). Parents, state agencies, and business leaders are increasingly insisting that colleges focus their attention on both the learning and personal development needs of students due to many of the significant public policy issues facing society today. Some educational leaders even suggest colleges and universities should measure the personal development that occurs in college to determine if students can lead productive lives and address major societal issues such as poverty, crime, economic development, and diversity (Astin, et al., 1994).

This emphasis on personal and social development can also be viewed as a renewed interest in the traditional purposes of a college education. Pascarella, Ethington, and Smart (1988) argued one of the primary goals of colleges in America has typically been the development of the intellectual aspects of the individual as well as "fostering of a sense of one's moral and civic responsibility. College has been regarded as one among a number of fundamental social/cultural institutions which prepares the young adult for concerned and involved citizenship in a democracy" (p. 412). This study evaluates the personal and social growth of college students and introduces an index of personal and social growth that assesses the role of the college in student growth. It also identifies areas of "substantial personal and social growth" in college and provides information that can help college officials make policy decisions to increase the impact of college on students.

Related Literature

General college outcomes research

Astin (1984) and others studying student development (e.g., Astin, 1993; Astin, et al, 1994; Hood, Riahinejad, & White, 1986; Kuh, 1993a; Kuh, 1993b; Niles, Sowa, and Laden, 1994; Pascarella and Terenzini, 1991) have made the case that student learning and development in college are influenced by the level of student "involvement." This involvement refers to the amount of physical and psychological energy a student

invests in the academic experience. Astin (1993) examined social, psychological, and cognitive development during college and attempted to determine the most important elements affecting student growth. Analyzing data collected between 1985 and 1990, Astin found that institutional type had little direct effect on student development outcomes. Rather, differences were due to the institution's size, research emphasis, faculty, peer groups, and its commitment to student development. He also obtained substantial evidence to support the potential "involvement" has for enhancing cognitive and affective development. Learning, academic performance, and retention were all positively associated with being involved with faculty, peer groups, and academic pursuits.

In an extensive review of the research completed during the past 20 years, Pascarella and Terenzini (1991) found that college attendance was associated with significant and "net" increases in several domains including verbal, quantitative, subject matter, cognitive growth, self-concept and self-esteem, moral development, attitude and value changes. Another significant finding was that students' experiences during college have more impact on the students than the nature of the college or university itself (Terenzini & Pascarella, 1994). This research suggests that given the proper learning environment, all types of institutions have ample opportunities to enhance the impact of the college experience.

Social and Personal Development

While much of the research has focused on cognitive and intellectual development, other researchers have studied the impact of college on personal and social growth. Consistent with Astin's work, research by Niles, Sowa, and Laden (1994) found that participation in student role activities, or what students actually did while they were in college, had more impact on student development than affective measures of their commitment. Jones (1990) found academically successful and persistent college students had value systems that emphasized developing inner harmony, caring relationships, and open-mindedness. On the other hand, academically unsuccessful students valued material comfort, pleasure-seeking activities, and conventional relationships. Hood, Riahinejad, and White (1986) found involvement was related to growth in self-confidence among college students and speculated growth did occur during the sophomore through senior years in college.

Loeb and Magee (1992) found decreases in prejudice and increased political and social concerns among college students. Interestingly, the personal characteristics of the students showed an initial adjustment period. That is, the majority of personal changes observed early moved in negative directions early and then recovered by the end of the second year. One issue they raised was the extent to which these changes were due to the college experience itself and which changes were due to aging and natural development in young adulthood. Erwin and Kelly (1985) found students experienced dramatic gains in confidence related to their satisfaction in school and their commitment to a vocation. Nevertheless, they pointed out the need to link changes to the environment to help determine the actual impact of college.

Pascarella, Ethington, and Smart (1988) assessed the influence of college on the humanitarian/civic involvement values of students. They found the undergraduate experience had a significant impact on the humanitarian values of students that was separate from individual student characteristics, the selectivity and size of the institution, and the subsequent educational attainment of the student. Of great value were the social leadership activities students participated in during their undergraduate experiences. One issue they discussed as they introduced their research is the difficulty of assessing the actual effects of college and separating them from the other experiences students have such as work or postcollege activities.

Pascarella and Terenzini (1991) found substantial evidence that college attendance causes a number of "net" changes in values and attitudes. These net changes include increases in aesthetic interests, greater altruism, humanitarianism, civic responsibility, and social conscience. Students became more liberal politically and had greater interest in social and political issues and processes. They also showed significant declines in religious attitudes, values, and behaviors in college.

Purpose of the study. The analyses of research on the impact of college have demonstrated clearly that "meaningful involvement" in the college environment can affect both intellectual growth and personality development (Astin, 1993; Pascarella & Terenzini, 1991). Yet even with the large number of studies that have been conducted, the complexity of understanding the college's role in student growth is still rather difficult to assess (Pascarella & Terenzini, 1991; Terenzini & Pascarella, 1991). In fact,

Pascarella (1991) argued that studies focusing on the changes from the freshman to senior year probably overestimate the "net" effect of college because they include growth that could be attributed to influences outside the college arena. Furthermore, earlier work leaves questions about the actual impact of college since it is difficult to isolate changes due to natural maturation (Ervin & Kelly, 1985; Loeb & Magee, 1992; Pascarella, Ethington & Smart, 1988) or because of the role of background or precollege factors (Smart & Pascarella, 1986).

The literature on college outcomes raises several questions that will be addressed in this research. First, considering an array of social and personal attributes in what areas do students observe the greatest personal and social growth during the college experience? Second, according to the perceptions of students, what contribution does the college make to this personal and social growth? Third, when considering the interaction between the personal growth and the role of college what are the areas where colleges have "substantial" impact on student growth? Lastly, when considering both personal growth and the role of the colleges, in what general areas of personal and social development are colleges having their greatest impact on students? While previous research has addressed certain aspects of these issues it has not often examined a comprehensive set of personal and social changes within one study. A comparative assessment could provide an overall evaluation of personal and social development and help determine where colleges have their greatest effects.

This study examined students from a variety of different colleges and universities across the country to identify general areas of college personal and social growth and the role of colleges. To assist with this task, an index of "personal growth attributed to college attendance" was developed. This index provides an indicator of "college effect" by considering the interaction of student growth and the college's contribution to that development. Identifying this development and assessing the impact of the college experience would help college officials assess a host of general areas of social and personal development and allow them to see where college makes its greatest contributions. It also provides a means of looking at the interaction between student's development and the college's role and offers one method of determining "net college impact," something that is difficult to assess without measuring the college's role in student development.

Method

Subjects

Data collection. Data were collected from 15,657 college students between February 1993 and April 1994 at 75 colleges and universities throughout 27 states. The students involved in this study completed the College Outcomes Survey (COS) as part of their institutions' efforts to assess student growth during college. The institutions administered the COS to a sample of their students (median response rate was approximately 50 percent) and the completed forms were sent to ACT for scoring and evaluation. The colleges involved in this study were those that had utilized the ACT research services during the period and were not randomly selected. However, the institutions were representative of institutions used to develop the preliminary national user norms for the College Outcomes Survey published in 1993 and represent both public and private institutions of various types from across the country (College Outcomes Survey Preliminary User Norms, 1993). The institutions included in the sample varied in size from small schools of a few hundred students to large universities with over 20,000 students. The sample included public, private, technical, two-year, and four-year colleges and universities from a variety of geographical regions in the United States.

Since the focus of this study was to assess the undergraduate students' personal and social growth since entering college and the colleges' contribution to that growth, students who had completed less than 24 hours of credit at the institution being studied (i.e., approximately one year) were deleted from the sample along with any students holding bachelors' degrees or working on advanced degrees. This left a subgroup of 9,348 participants who provided data for the study.

Demographic Characteristics. The demographic characteristics of the groups suggest the subjects are representative of many state and private two- and four-year colleges and universities across the country. Approximately two-thirds of the respondents were between the ages of 19-26 with the largest group falling between the ages of 20 and 22 (46%). Approximately 25 percent of the students were studying part-time (less than 12 hours) and most enrolled in colleges in their home state of residence (88%). Students selected their major area of study from ACT's List of College Majors and Occupational Choices and indicated they studied a variety of majors areas

including business (21%), health sciences (17%), social and community services (15%), education (12%), architecture/engineering/engineering technical (11%), math/sciences (9%) agriculture/vocational (5%), communication/performing arts (5%), and language/philosophy/religion (2%).

The students came from families where approximately half of their mothers and half of their fathers had completed some college work although only about 30% of the fathers and 20% of the mothers had completed a bachelor's degree or higher. Sixty percent of the respondents were female and 40% were male. Eighty-six percent classified themselves as "white" with the other 14% identifying themselves as American Indian, Asian, Black, or multiracial.

Forty percent of the students were pursuing associate degrees, just over 50% were pursuing bachelor's degrees, and the other 10 % were enrolled in school for other motives. Approximately fifty percent of the students had completed at least 80 hours of college course work before completing the COS and 35% had completed at least 100 hours of college course work.

Representativeness of Sample. To assess the representativeness of the subjects, the responses to items in Section II, Part D of the instrument were compared to the College Outcomes Survey Preliminary User Norms published in 1993. The Preliminary User Norms technical manual was developed to allow college officials to compare their institutions to a larger national sample. The user norms data set was built using a process of "downsampling" to ensure that no one institution or state system was over-represented in the normative group. When comparing the total data set to the national norms the frequency distributions for each category for all 36 items were within two percentage points of those from the national norms. On this basis, subjects selected for this study were considered to be representative of the national user norms and thus a representative sample.

Measure

The ACT College Outcomes Survey was used to obtain data for this study. The *COS* is a several page questionnaire designed to evaluate the college experience and assess students' perceptions of their growth and preparation in both cognitive and affective areas. The ACT College Outcomes Survey was developed by the Educational and Social Research Division of the American College Testing Program (ACT). There

are four major sections of the COS that include questions about background information, college outcomes, satisfaction with aspects of college, and student experiences in college.

Only the 36 items in Section II, Part D of the College Outcomes Survey were used for this analysis. Section II, Part D contains items measuring personal and social growth in areas such as personal values and responsibilities, understanding self and others, tolerance, emotions, leadership skills, interests, social and civic responsibilities, and moral and religious development and assesses the personal growth students observed since enrolling in college. This list of items provides a somewhat comprehensive assessment of the areas of student personal and social growth in college.

Participants responded to the 36 outcome variables on two different dimensions labeled **personal growth (PG)** and **college contribution (CC)** and reflect two aspects of the college development issue. Personal growth is "the extent of your growth since entering this college (regardless of the extent of the contribution made by your experiences at this college); this item was rated on a five point scale where 5 = very much and 1 = none. The second component, college contribution is "the extent of the college's contribution (i.e., your college experience both in and out of class) to your growth (regardless of the extent of your personal growth in a given area)." This item was also rated on a five point scale where 5 = very great and 1 = none. On each item subjects were also given the option of responding that the item was "not applicable."

Validity and Reliability. The COS was originally developed based on research from the college outcomes literature and designed to measure college student perceptions of their growth and preparation in cognitive and affective areas as well as their satisfaction with various areas of the college. Both two- and four-year institutions helped develop the instrument and the National Council for Student Development provided special assistance and input in the instrument design process. Outcome statements are designed to be broad enough to be applicable to most postsecondary institutions but specific enough to provide data that is transferable into institutional actions. The COS was designed for administration to students near the completion of their programs of study (College Outcomes Survey Preliminary User Norms, 1993; G. McLure, personal communication, April 28, 1995).

An earlier version of the COS was piloted-tested nationwide on several thousand two- and four-year students and refinements were made according to the pilot-test results. Components of the pilot version of the COS were articulated with comparable components of the ACT College Outcome Measures Program (COMP) instrument. Furthermore, longitudinal studies conducted by Steel and Nichols (1992) indicated students' perceptions of their growth were clearly related to their actual growth as measured by the COMP instrument.

Reliability estimates were established using generalizability theory because of the multi-dimensionality of the COS and the possible uses of the instrument (e.g., individual, college, or outcome variable comparisons). For this particular study the comparison is based on average student ratings of various outcome variables where the variables are the object of analysis with students as the source of error. Analysis for this type of comparison yielded generalizability coefficients that ranged from .96 with groups of 200 to .99 with groups of 500 (Sun, 1995).

Analysis

To assess both student growth and the impact of college an "index of personal growth attributed to college attendance" was computed for each of the 36 items. The purpose of this index was to represent both personal growth students observed and the contribution made by the college. This index, representing the interaction between growth and college contribution, would provide a method of assessing general areas where colleges have substantial impact.

This index was computed by multiplying the PG variable rating by a proportion that represents the relative contribution of the college experience on that growth. The proportion is determined by dividing the CC variable rating by 5 -- the highest possible rating. For example, if a student rated the PG variable 3 and the CC variable 4, the calculation would yield a derived index score of 2.4 (i.e., 4 divided by 5, multiplied by 3). This combined score was then transformed into a standard scale score with a maximum value of 100 to assist with interpretation. This resulting index score provided a combined estimate of both the growth occurring during college and the colleges' contribution (G. Pike, personal communication, March 24, 1995).

We identified two criteria to determine areas of "substantial personal and social growth" as a result of the college experience. Each variable had to have an mean index

value of 36 or above and an item mean value of three or higher on both the PG and CC variables to be seen as an area of substantial impact, i.e., higher than moderate in both areas. These criteria were established based on the scaling of the items and a theoretical response for students who perceived at least a moderate or greater average impact on both the personal growth and college contribution variables.

We conducted an additional analysis to evaluate the impact of college on broad conceptual areas of personal and social growth. We used factor analysis on the individual index values that were derived to help identify general areas of personal and social growth. A principle components factor analysis with an orthogonal rotation using the varimax procedure was used. To determine which factors to retain, a scree test was utilized as was the Kaiser criterion, which recommends that only items with eigenvalues above 1.0 be included. The factor loadings for the individual items ranged between .471 and .807 with most factors falling in the .600 - .700 range.

We also tested the integrity of the relationship between the factors and the items. A Pearson correlation analysis was used, contrasting the individual items with the factors. This sort of technique is often used during the instrument construction phase (Nunnally, 1978). However, it was anticipated that with the large sample size the correlations would also be useful in examining the factors themselves. These correlation coefficients for the items were relatively high and ranged from .648 to .847. The individual item correlations are presented in Table 3.

These clusters of variables were then used to compute weighted average index scores representing both personal growth and the college contribution and indicate the college impact on broad areas of growth. The specific grouping of these variables is listed in Table 3 along with the index scores computed for the factors.

Results

Personal and social growth in college

The individual item mean ratings for the "personal growth" variables ranged from 3.04 to 4.05. The items for which students saw the greatest amount of personal growth since entering college included things such as taking personal responsibility, academic competence, acquiring a well-rounded general education, intellectual curiosity, long-term goal setting, and self-confidence. The items where students observed the lowest amount of personal growth in college included aspects such as becoming active in volunteer work, developing religious values and understanding those of others, and understanding human nature.

College contribution to development

The mean scores for the variables measuring the role of college in contributing to personal growth ranged from 2.32 to 3.83. Students indicated the colleges' contributions were greatest in acquiring a well-rounded education, becoming academically competent, intellectual curiosity, being willing to change and learn new things, and perseverance The items where the colleges' contributions were lowest regardless of the amount of personal growth were similar to those rated low for personal growth and included becoming a more responsible family member, developing religious values, participation in volunteer work, understanding others' religious values, managing finances, and participating in elections (the individual item means and standard deviations for the personal growth and college contribution variables are presented in Table 1).

Index of personal growth attributed to college attendance

On a 100 point scale, the computed indexes of college impact and growth ranged from a high of approximately 64 to a low of 33. The highest index values were in the areas of acquiring a well-rounded general education, becoming academically competent (62.01), increasing intellectual curiosity (60.69), setting long-term goals (56.29), being willing to change and learn new things (55.99), developing self-confidence (54.71), taking responsibility for own behavior (54.20), and dealing with a wide-range of people (53.28). The lowest indexes were in the areas developing religious values (33.35), becoming active in volunteer work (36.12), understanding different religious values (39.72), and participating in the electoral process (41.25). A complete listing of the index values are presented in Table 2.

Twenty-eight of the 36 areas of personal and social growth met the two criteria established to identify "substantial college impact" and included aspects of personal growth in areas of academic competence, self-confidence, goal setting, understanding self and others, and gaining abilities to work with others. The eight areas that did not meet the criteria included those related to moral and religious values, family responsibilities, managing finances, and civic involvement (see Table 2).

Factor analysis - When the factor analysis was conducted, four factors emerged that were identified as (1) intra-personal development, (2) personal valuing and moral development, (3) social leadership and development, and 4) civic involvement and awareness.

Factor one, labeled intra-personal development, consisted of items related to learning new things, developing self-confidence, understanding myself and my talents, acquiring social skills, becoming academically competent, developing productive work relations with others, increasing intellectual curiosity, setting long-term goals, finding a sense of purpose for life, constructively expressing emotions and ideas, acquiring a well-rounded general education, sticking with projects until the end, and dealing fairly with a wide range of people.

Factor two, identified as personal valuing and moral development, consisted of items focusing on skills such as seeking and conveying truth, becoming a more responsible family member, understanding different religious values, learning to manage finances, developing religious values, clarifying personal values, taking personal responsibility, and developing moral principles to guide my actions.

Factor three, social leadership and development, contained items associated with becoming an effective team member, considering differing points of view, developing abilities to relate to others, interacting with people of different cultures, participation in volunteer work, coping with change, developing leadership skills, and learning to be adaptable and tolerant.

Factor four, identified as civic involvement and awareness, addressed the skills of becoming a more effective citizen. This factor contained the variables measuring awareness of global issues, participating in the electoral process, awareness of social and political issues, gaining insight into human nature, recognizing rights, responsibilities and privileges, and being sensitive to moral injustices.

The item measuring being "an effective member in a multi-cultural society" loaded on all four factors equally (ranging from approximately .34 to .40 on all factors) so it was not included in the factor structure as an individual item. See Table 3 for a complete listing of the factors, the factor loadings, and the correlation coefficients for the variables.

College impact on broad categories of college growth

Examining the broad categories of college impact on student development showed that the highest index value was in the area of intra-personal development (mean value = 54.94), followed by social leadership and development (mean value = 49.53), civic involvement and awareness (mean value = 45.16), and personal valuing and

BEST COPY AVAILABLE

moral development (mean value = 44.34). The specific variables identified in the factor analysis used to calculate the broad indexes of growth are presented in Table 3.

Discussion

Using the College Outcomes Survey, we found that students gave the college experience rather high marks in going beyond just intellectual development by contributing to their personal and social growth. According to the students' perceptions, the college experience effects an array of social and personal areas and in several areas it makes greater than moderate contributions to this growth. Index values representing "personal and social growth attributed to college attendance" indicated that on 28 of 36 areas students perceive substantial impact on their personal development. In fact, only areas such as those associated with religious values, family responsibility, managing finances, and participating in elections received less than moderate impact ratings.

These findings may provide some comfort to critics of higher education who feel that colleges are not addressing the social and emotional aspects of the individual. When students were asked to rate the college experiences and the contribution of the college, they indicated college was clearly a time for social and personal growth cross an array of variables. The findings support those of earlier researchers (Hood, Riahinejad, & White, 1986; Loeb and Magee, 1992; Pascarella, Ethington, and Smart, 1988; Terenzini & Pascarella, 1991) and present a comprehensive view of the social and personal changes students observe. These data suggest college experiences affect personal growth in many different areas simultaneously and do not just affect a limited spectrum of personal growth. Furthermore, it appears that colleges are at least somewhat successful in addressing the traditional purposes of a college education. As noted earlier, one of the principle goals of colleges in America has been to foster a sense of one's moral, social, and civic responsibilities (Pascarella, Ethington, and Smart, 1988). Our data suggest that colleges are having at least moderate success with that goal.

The four general factors identified in this research provide a means to assess broad constructs of personal and social development in college. Here the greatest impact came in the area of intra-personal development where the factor had a mean index value over five points higher than the other three factors and almost ten points higher than two of them. This finding is likely due to the nature of the items in this

factor. It contains items measuring traditional college life including such things as academic competencies, intellectual curiosity, obtaining a well-rounded education, setting long-term goals, perseverance, and learning new things. These are aspects colleges have traditionally focused their efforts on and seem to currently receive the most attention.

The four broad factors used in this study represent constructs similar to those studied by other researchers who found changes in self-concept and self-esteem, moral development, and attitude change (Pascarella and Terenzini, 1991), increased social and political concerns along with increased self-perceptions (Loeb and Magee, 1992), and humanistic and civic involvement (Pascarella, Ethington, and Smart, 1988). College officials could use the indexes of broad constructs of personal and social growth to assess how integrated learning and personal development activities affect students.

One noteworthy finding was that the college experience did not affect the personal valuing and moral development factor to the same extent as it did the other general areas. Not only was the mean index value the lowest, but six of the eight items making up this construct failed to meet the criteria set for establishing substantial impact. This suggests that while the college experience probably does affect the personal and social growth of students it has its least impact on how individuals develop moral principles, become responsible family members, and seek the spirit of truth. This is a significant issue in today's complex and multi-cultural society. Hood (1987) and Brown (1987) have articulated the importance of focusing on the ethical and moral development of college students and discuss the value of articulating a set of moral principles apart from a particular religious creed. Since this is an area for personal growth, perhaps college officials could identify a general set of moral and ethical principles and goals that would allow public colleges and universities to address the ethical and moral dimensions of college.

Despite the fact that most of the colleges' efforts are directed at the intellectual development of students this study suggests that they indeed contribute to wide range of personal and social development issues. This offers opportunities for colleges to enhance their impact to strengthen their role in this area. To address some of these areas, colleges may want to focus more efforts on increasing student involvement in the personal, social, and learning activities that comprise the college experience (Astin,

1993; Pascarella and Terenzini, 1991). It is likely that until the last decade or so, we have not completely understood the systematic attempts necessary to integrate student learning experiences, foster involvement in college activities, and create an educational ethos to strengthen the impact of college (Kuh, 1993a). In most cases colleges probably have not yet reached the limit of their abilities to contribute to personal and social growth among their students.

Recent research on student outcomes suggests there are many ways that colleges can respond to enhance the impact and value of the undergraduate college experience. Kuh (1992) has outlined several areas where colleges can focus their attention to increase their impact including effective teaching, interactions with peers that support the institution's educational values, a balanced curriculum committed to general education, and policies that make students feel they are valued as individuals and that integrate their academic and social lives. Astin, et al (1994) recommends college officials link academic and student service programs and articulate general frameworks of growth for students. Integrating students' personal and academic development through internships and course experiences can allow students to confront real-world problems and provide opportunities for leadership roles that are similar to ones they will be required to develop once they join the world of work.

Terenzini and Pascarella (1994) make a convincing argument that colleges do not have to have unlimited resources, nationally known researchers, and Nobel prize-winning faculty to increase the impact of their efforts. In fact, student growth is only trivially related to traditional measures of quality such as educational expenditures per student, faculty/student ratios, faculty salaries, and research productivity. Instead, the real quality of the undergraduate experience rests more on the educational ethos and in what a college does programatically to tie academic and social engagement to one another. Recent advances in cognitive psychology (Anderson & Armbruster, 1990) and student involvement (Astin, 1993; Pascarella and Terenzini, 1991) might offer ideas to help design meaningful learning experiences for students that integrate cognitive growth and personality development. Thus, all colleges can engage students in experiences that promote personal and social development in conjunction with their cognitive development.

This study suggests the College Outcomes Survey provides a unique mechanism for examining the impact of college. Using the COS, the study identifies areas of personal and social gain and presents an index of personal growth that considers the interaction between personal growth and the role of the college experiences. The indexes provide a distinct way to measure what happens in college and provides guidance for college administrators and faculty on where the colleges are having their greatest overall impact. By taking both the personal growth and the contribution made by the college into consideration college officials may be able to increase the impact of their efforts. These indexes could also be used in a host of ways to evaluate various levels of involvement, to assess the experiences of older students, or to evaluate the effects of different major fields of study.

Evaluating personal and growth and the contribution made by college offers one way to understand the impact of college. Furthermore, integrating both cognitive and affective development through concerted efforts may hold promise for increasing college impact. Not only is it consistent with the large body of research on college outcomes, but it appears colleges already have more than a moderate influence on many areas of students' personal and social growth with modest efforts. Future recommendations to shape the curriculum and the college environment for greatest student growth could be based on specific activities designed to bring about changes on broad dimensions such as valuing and moral development, social leadership, or personal growth. These focused and purposeful steps might increase the colleges' contribution to student personal and social growth.

References

Anderson, R. & Armbruster, B. (1990). Some maxims for learning and instruction. Teachers College Record, 91, (3), 396-408.

Ashworth, K. (1994). Performance-based funding in higher education: The Texas case study. Change, 26 (6), 8-14.

Astin, A. (1984). Student involvement: A developmental theory for higher education. Journal of College Student Personnel, 25 (7), 297-308.

Astin, A. (1993). What matters in college: Four critical years revisited. San Francisco: Jossey Bass.

Astin, A., Astin, H., Bloland, P., Cross, K. P., Hearst, J., Kuh, G., Marchese, T., Nuss, E., Pascarella, E., Pruitt, A., Rooney, M., & Schroeder, C. (1994). The student learning imperative: Implications for student affairs. American College Personnel Association, Washington, DC.

Brown, R. (1987). Value development in the college years: A cause for concern and an opportunity for growth. Counseling and Values, 31(2), 142-144.

Chickering, A., & Gamson, Z. (1987). Seven principles for good practice in undergraduate education. AAHE Bulletin, 39 (7), 3-7.

American College Testing. (1993, November). College Outcomes Survey Preliminary User Norms. Iowa City, IA: Author.

Erwin, T. D., & Kelly, K. (1985). Changes in students' self confidence in college. Journal of College Student Personnel, 26 (5), 395-399.

Ewell, P. (1994). A matter of integrity: Accountability and the future of self-regulation. Change, 26 (6), 25-29.

Graham, S., Miller, H., Schmidt, J., & Stickney-Taylor, L. (1994, October). Shaping the future of outreach on campus: Taking the lead. Paper presented at the NUCEA Region IV Conference, Duluth, MN.

Hood, A., Riahinejad, A., & White, D. (1986). Changes in ego identity during the college years. Journal of College Student Personnel, 21, 107-113.

Hood, A. (1987). Value development in the college years. Counseling and Values, 31(2), 144-146.

Jones, C. (1990). Relationship of entering students' values to academic achievement and persistence in college. College Student Journal, 24(4), 353-355.

Kuh, G. (1992). What do we do now? Implications for educators of "*How college affects students*." Review of Higher Education, 15 (3), 349-363.

Kuh, G. (1993a). In their own words: What students learn outside the classroom. American Educational Research Journal, 30, (2), 277-304.

Kuh, G. (1993b). Ethos: Its influence on student learning. Liberal Education, 79 (4), 22-31.

Loeb, R., & Magee, P. (1992). Changes in attitudes and self perceptions during the first two years of college. Journal of College Student Development, 33 (4), 348-355.

Marchese, T. (1994). Accountability. Change, 26 (6), 4.

Niles, S. G., Sowa, C. J., & Laden, J. (1994). Life role participation and commitment as predictors of college student development. Journal of College Student Development, 35, 159-163.

Pascarella, E. (1985). Students' affective development within the college environment. Journal of Higher Education, 56 (6), 640-663.

Pascarella, E. (1991). The impact of college on students: The nature of the evidence. Review of Higher Education, 14(4), 453-466.

Pascarella, E., Ethington, C., & Smart, J. (1988). The influence of college on humanitarian/civic involvement values. Journal of Higher Education, 59 (4), 412-437.

Pascarella, E., & Terenzini, P. (1991). How college affects students: Findings and insights from twenty years of research. San Francisco: Jossey Bass.

Smart, J., & Pascarella, E. (1986). Socioeconomic achievements of former college students. Journal of Higher Education, 57 (5), 529-549.

Steel, J. & Nichols, P. (1992, November). Linking COMP objective test scores with student perceptions of growth. Paper presented at Evaluation '92, the Annual Meeting of the American Evaluation Association, Seattle, WA.

Sun, A. (1995). The reliability of the *College Outcomes Survey*, Iowa City, IA: American College Testing.

Terenzini, P., & Pascarella, E. (1994). Living with myths: Undergraduate education in America. Change, 26 (1), 28-32.

Terenzini, P., & Pascarella, E. (1991). Twenty years of research on college students: Lessons for future research. Research in Higher Education, 32 (1), 83-92.

Votruba, J. C. (1992). Promoting the extension of knowledge in service to society. Metropolitan Universities, 3 (3), 72-80.

Table 1

Mean Scores for Individual Items

Students' personal growth and college contribution	College Contrib. Mean	College Contrib. SD	Personal Growth Mean	Personal Growth SD
1. Acquiring well-rounded general education	3.83	.99	3.99	.91
2. Becoming academically competent	3.74	.98	4.01	.87
3. Increasing intellectual curiosity	3.67	1.01	3.99	.89
4. Willing to change & learn new things	3.47	1.02	3.89	.89
5. Ability to stay with project until end	3.42	1.09	3.83	.97
6. Ability to relate to others	3.42	.98	3.85	.86
7. Setting long-term or life goals	3.39	1.13	3.98	.97
8. Developing self-confidence	3.36	1.11	3.91	.94
9. Willing to consider opposing points of view	3.35	.96	3.77	.86
10. Dealing fairly with a wide range of people	3.34	1.06	3.83	.92
11. Becoming effective team or group member	3.33	.99	3.74	.90
12. Developing leadership skills	3.29	1.10	3.75	.97
13. Productive work relations with others	3.27	1.09	3.81	.95
14. Interacting well with people different cultures	3.25	1.12	3.64	1.00
15. Taking responsibility for own behavior	3.23	1.20	4.05	.95
16. Acquiring appropriate social skills	3.22	1.07	3.74	.94
17. Understanding myself, my talent, interests	3.20	1.08	3.81	.93
18. Coping with changes as they occur	3.20	1.06	3.81	.92
19. Learning to be adaptable, tolerant, negotiate	3.18	1.02	3.68	.90
20. Gaining insight into human nature	3.15	1.10	3.30	1.07
21. Sense of purpose and value for life	3.15	1.12	3.93	.94
22. Constructively express emotions & ideas	3.11	1.07	3.67	.95
23. Aware of global issues	3.11	1.11	3.53	1.02
24. Effective member in multicultural society	3.08	1.10	3.49	1.01
25. Recognizing rights, responsibilities, privileges	3.07	1.11	3.54	1.02
26. Sensitive to moral injustices	3.05	1.09	3.59	1.01
27. Aware of political & social issues	3.04	1.15	3.50	1.05
28. Clarifying personal values	3.01	1.11	3.87	.92
28. Seeking & conveying spirit of truth	2.97	1.12	3.67	1.02
30. Developing moral principles to guide actions	2.93	1.14	3.74	.99
31. Learning to manage finances	2.84	1.22	3.68	1.07
32. Participating in election process	2.83	1.18	3.36	1.11
33. Understanding religious values diff. from own	2.74	1.19	3.33	1.11
34. Becoming more responsible family member	2.70	1.26	3.77	1.06
35. Active in volunteer work	2.66	1.18	3.04	1.18
36. Developing religious values	2.32	1.23	3.30	1.24

N's ranged from 7,900 to 9,100 for each item

Table 2

Index of Personal Growth Attributed to College Attendance

Mean and index values for personal growth and college impact	PG	CC	Index
1. Acquiring well-rounded general education	3.99	3.83	63.55 *
2. Becoming academically competent	4.01	3.74	62.01 *
3. Increasing intellectual curiosity	3.99	3.67	60.69 *
4. Setting long-term or life goals	3.98	3.39	56.27 *
5. Willing to change & learn new things	3.81	3.47	55.99 *
6. Ability to stay with project until end	3.83	3.42	54.79 *
7. Developing self-confidence	3.91	3.36	54.71 *
8. Ability to relate to others	3.85	3.42	54.51 *
9. Taking responsibility for own behavior	4.05	3.23	54.20 *
10. Dealing fairly with a wide range of people	3.83	3.34	53.28 *
11. Willing to consider opposing points of view	3.77	3.35	52.33 *
12. Productive work relations with others	3.81	3.27	52.23 *
13. Becoming effective team or group member	3.74	3.33	51.84 *
14. Developing leadership skills	3.75	3.29	51.81 *
15. Sense of purpose and value for life	3.93	3.15	51.56 *
16. Understanding myself, my talents, & my interests	3.81	3.20	50.78 *
17. Coping with changes as they occur	3.81	3.20	50.75 *
18. Acquiring appropriate social skills	3.74	3.22	50.43 *
19. Interacting well with people from different cultures	3.64	3.25	50.05 *
20. Learning to be adaptable, tolerant, willing to negotiate	3.68	3.18	48.86 *
21. Clarifying personal values	3.87	3.01	48.39 *
22. Constructively express emotions & ideas	3.67	3.11	47.94 *
23. Aware of global issues	3.53	3.11	46.59 *
24. Sensitive to moral injustices	3.59	3.05	46.30 *
25. Recognizing rights, responsibilities, & privileges	3.54	3.07	46.23 *
26. Developing moral principles to guide actions	3.74	2.93	45.96
27. Effective member in multicultural society	3.49	3.08	45.93*
28. Seeking & conveying spirit of truth	3.67	2.97	45.93
29. Aware of political & social issues	3.50	3.04	45.46*
30. Gaining insight into human nature	3.30	3.15	45.16*
31. Learning to manage finances	3.68	2.84	44.24
32. Becoming more responsible family member	3.77	2.70	42.91
33. Participating in election process	3.36	2.83	41.25
34. Understanding religious values different from own	3.33	2.74	39.72
35. Active in volunteer work	3.04	2.66	36.12
36. Developing religious values	3.30	2.32	33.35

PC = Personal Growth
CC = College Contribution

* Items met criteria for substantial college impact

Table 3: Factor Loadings & Item Correlations for 36 Outcome Variables Measuring College Impact

Factor I	**Intra-personal Development (54.94)**	R
.746	Becoming academically competent	.727
.738	Increasing intellectual curiosity	.742
.707	Acquiring well-rounded general education	.702
.665	Setting long-term or life goals	.781
.659	Willing to change & learn new things	.807
.659	Developing self-confidence	.785
.612	Understanding myself, my talents, & my interests	.803
.598	Ability to stay with project until end	.750
.574	Sense of purpose and value for life	.781
.548	Productive work relations with others	.766
.530	Constructively express emotions & ideas	.785
.503	Acquiring appropriate social skills	.764
.471	Dealing fairly with a wide range of people	.742
Factor II	**Personal Valuing & Moral Development (44.34)**	R
.747	Developing religious values	.730
.702	Becoming more responsible family member	.811
.642	Developing moral principles to guide actions	.812
.595	Clarifying personal values	.784
.539	Learning to manage finances	.660
.539	Taking responsibility for own behavior	.764
.566	Understanding religious values different from own	.724
.507	Seeking & conveying spirit of truth	.740
Factor III	**Social Leadership and Development (49.53)**	R
.712	Becoming effective team or group member	.756
.676	Ability to relate to others	.820
.663	Developing leadership skills	.780
.630	Willing to consider opposing points view	.774
.621	Learning to be adaptable, tolerant, willing to negotiate	.807
.619	Interacting well with people from different cultures	.729
.586	Coping with changes as they occur	.777
.497	Active in volunteer work	.662
Factor IV	**Civic Involvement & Awareness (45.16)**	R
.807	Aware of political & social issues	.847
.744	Participating in election process	.808
.722	Aware of global issues	.770
.650	Gaining insight into human nature	.712
.621	Recognizing rights, responsibilities, & privileges	.812
.565	Sensitive to moral injustices	.777